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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/569,002

02/15/2006

Mitsuhiro Kashiwabara

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29175 7590 12/10/2008  
BELL, BOYD & LLOYD, LLP  
P. O. BOX 1135  
CHICAGO, IL 60690

EXAMINER

HOLLWEG, THOMAS A

ART UNIT

PAPER NUMBER

2879

MAIL DATE

DELIVERY MODE

12/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/569,002	<b>Applicant(s)</b> KASHIWABARA, MITSUHIRO	
	<b>Examiner</b> Thomas A. Hollweg	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/24/2008</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Acknowledgment of Amendment***

1. Applicant's amendment, received August 21, 2008, is acknowledged. No claims are cancelled. Claim 19 is added. Claims 11-19 are currently pending.
2. Acknowledgment is made to the amendment of claim 13. The objection to claim 13 is withdrawn.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on October 24, 2008, is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., U.S. Patent Application Publication No. 2004/0032214 A1, in view of Yamazaki et al., U.S. Patent Application Publication No. 2004/0012331 A1.
6. With regard to claim 11, in figures 4B-D, Lee discloses an organic EL device comprising: a plurality of light emitting layers (44, 49, 50) including a red light emitting layer (50), a green light emitting layer (49), and a blue light emitting layer (44) laminated between an anode (41) and cathode (48); and an intermediate layer (45) comprised of

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an organic material provided in at least one location between the light emitting layers (44, 49, 50) [0031-0037], wherein the green light emitting layer has a hole transporting property and an electron transporting property (see Response to Arguments below).

Lee does not expressly disclose that the layers are in the order

anode/red/green/blue/cathode.

7. Yamazaki, in figure 1A, teaches an organic EL device having a plurality of light emitting layers (12a-c) that may be selected to generate white light by doping polymer materials with pigments [0052-0063]. Based on this teaching, one having ordinary skill in the art would understand that white light may be generated by doping the layers to emit red, green and blue light. One would further understand that the stacking order of the emission layers and the direction of emission are both matters of design choice.

8. Therefore, at the time of invention, it would have been an obvious design choice for a person having ordinary skill in the art to construct the Lee organic EL device where the layers are arranged anode/red/green/blue/cathode, according to the teaching of Yamazaki, to produce excellent white light emission.

9. With regard to claim 12, in figures 4B-D, Lee discloses that a HOMO-LUMO energy gap of the intermediate layer (45) is greater than a HOMO-LUMO energy gap of at least one material constituting the light emitting layers (44, 49, 50) disposed adjacent to the intermediate layer (45) (energy gap property is inherent to the materials discloses) [0031-0037].

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10. With regard to claim 13, in figures 4B-D, Lee discloses that the intermediate layer (45) has a hole transporting property and an electron blocking property (properties inherent to the materials disclosed) [0033].

11. With regard to claim 14, in figures 4B-D, Lee discloses that the intermediate layer (45) has both a hole transporting property and an electron blocking property (properties inherent to the materials disclosed) and is provided at least between the green light emitting layer (49) and the blue light emitting layer (44) [0031-0037].

12. With regard to claim 15, in figures 4B-D, Lee discloses that a LUMO energy level of the intermediate layer (45) having a hole transporting property is higher than a LUMO energy level of an electron transporting component in the green light emitting layer (49) (properties inherent to the materials disclosed) [0031-0037].

13. With regard to claim 16, the limitation “the red light emitting layer, the green light emitting layer, and the blue light emitting layer are laminated in respective order from the anode side between the anode and the cathode” is redundant from claim 11 and does not further limit the invention. In figures 4B-D, Lee discloses that the intermediate layer (45) has both a hole transporting property and an electron blocking property (properties inherent to the materials disclosed) and is provided at least between the red light emitting layer (50) and the green light emitting layer (49) [0031-0037].

14. With regard to claim 17, in figures 4B-D, Lee discloses that the LUMO energy level of the intermediate layer (45) having an hole transporting property is higher than the LUMO energy level of an electron transporting component in the red light emitting layer (50) (properties inherent to the materials disclosed) [0031-0037].

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15. With regard to claim 18, all of the limitations are disclosed by Lee and Yamazaki, as discussed in the rejection of claim 11 above, except for a color filter on the light take-out surface side of an organic EL device.

16. Yamazaki teaches an organic EL device with a color filter on the light take-out surface side [0061]. At the time of invention, it would have been obvious for a person having ordinary skill in the art to construct the Lee and Yamazaki organic EL device, as discussed in the rejection of claim 11, where a color filter is disposed on the light take-out surface, as taught by Yamazaki, so that red, green and blue light may be selectively emitted from the organic EL device.

***Claim Rejections - 35 USC § 112***

17. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

18. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

19. Claim 19 requires that the organic EL device is configured so that a red light emitting layer, a green light emitting layer and a blue light emitting layer are laminated in respective order between an anode and a cathode. Claim 19 further requires that the intermediate layer has an electron transporting property and a hole blocking property.

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20. The specification briefly mentions that a device may have this configuration, in paragraphs [0009, 0062, 0074], if "luminous intensities are contrary" to the luminous intensities of the described inventions. However, an embodiment having such a configuration is not described in the specification or shown in the drawings. Further, the specification never mentions a material that can be used for the intermediate layer having the characteristics of claim 19. All of the examples given have an intermediate layer with an electron blocking and hole transporting property.

21. Paragraphs [0077-0078] describe an embodiment unlike the embodiment claimed in claim 19, where the blue light emitting layer is laminated closest to the anode layer and the intermediate layer has an electron transporting and hole blocking property. However, even in this description a material having these characteristics is not mentioned.

### ***Response to Arguments***

22. Applicant argues that every element of the newly amended claims 11 and 18, having the newly added limitation, "wherein the green light emitting layer has a hole transporting property and an electron transporting property," are not disclosed or suggested by the prior art of record.

23. As noted by applicant, Lee discloses a green light emitting layer that is comprised of tris(8-hydroquinolino) aluminum (Alq3). Applicant asserts that "Alq3 alone is not a green light emitting layer with a hole transporting property and an electron transporting property as required, in part, by the present claims." The examiner respectfully disagrees with this assertion.

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24. Alq3 is recognized for its electron transporting property, as applicant acknowledges in the specification, paragraph [0059]. However, for the Lee device to operate, the green light emitting layer, comprising Alq3 (49 of figs. 4B-D) must allow both electrons and holes move into the adjacent layers. Similar to applicant's claimed invention, Lee's organic EL device emits white light through a combination of red, green and blue light, each emitted from a respective red, green and blue light emitting layer (Lee [0012, 0031-0032]). The device shown in figure 4D operates by emitting red light from red light emitting layer (50) by combining holes supplied by the green light emitting layer (49), made of Alq3, and electrons supplied by electron transport layer (47) (Lee [0041-0042]). If the green light emitting layer (49) did not have a hole transporting property, no holes would be supplied to the red light emitting layer (50) and the Lee device would be inoperable. Examiner acknowledges that the electron transporting property of the green light emitting layer is greater than the hole transporting property, however, the green layer has a hole transporting property, and transports holes during the operation of the device, as it must for white light to be generated.

25. Applicant's arguments regarding the specific composition of the green light emitting layer disclosed in the specification of the present application is acknowledged, however these characteristics are not contained in the claims.

### ***Conclusion***

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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27. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Hollweg whose telephone number is (571) 270-1739. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm E.S.T..

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

30. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TH/

/NIMESHKUMAR D. PATEL/

Supervisory Patent Examiner, Art Unit 2879